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(71)Applicant : LINTEC CORP

TOSHIBA CORP

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(72)Inventor : NOGUCHI ISATO

TAKAHASHI KAZUHIRO

EBE KAZUYOSHI

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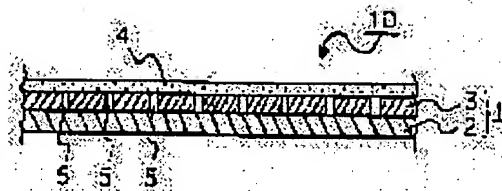
KUROSAWA TETSUYA

(54) PRESSURE-SENSITIVE ADHESIVE SHEET AND ITS USE

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a pressure-sensitive adhesive sheet suitable for a process by which an extremely thin chip is produced in good yield by forming a film having many fine notches and different in shrinkage, on a film and further forming a pressure-sensitive adhesive layer thereon.

SOLUTION: This pressure-sensitive adhesive sheet is obtained by forming a pressure-sensitive adhesive layer 4 on a substrate 1 composed of a first film 2 and an elastic second film 3 having many fine notches 5 formed therein. The first film 2 is preferably a nonshrinkable film [having $<10\%$ shrinkage of the equation $100 \times (\text{the size before the shrinkage} - \text{the size after the shrinkage}) / (\text{the size before the shrinkage})$] having 5-300 μm thickness, e.g. a polyethylene film and a polypropylene film. The second film 3 is preferably a heat-shrinkable film, preferably having 10-90% shrinkage, and having 5-300 μm thickness, preferably a biaxially oriented film or the like such as polyethylene terephthalate and polystyrene films. The notches 5 are preferably formed so as to extend to the nearly whole



thickness.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to protection of weak adherend, or the pressure sensitive adhesive sheet with which a target is preferably used for immobilization especially about a pressure sensitive adhesive sheet temporarily.

[0002]

[Background of the Invention] In recent years, the spread of IC cards progresses and the further thin shape-ization is desired. For this reason, thickness will need to make thin conventionally the semiconductor chip which was about 350 micrometers to less than [50-100 micrometers in thickness, and it].

[0003] Although carrying out grinding of the wafer rear face after circuit pattern formation was performed conventionally, if it is going to carry out grinding of the wafer to 100 micrometers or less in thickness, the reinforcement of a wafer will fall and it will become easy to damage. Since especially a wafer is weak, even when it is small in a wafer, when there is a defect, it originates in this defect, a crack occurs, and this crack may reduce breadth and the yield of a chip to the whole wafer remarkably greatly.

[0004] In order to prevent destruction of the wafer by expansion of the above cracks, the formation approach of the thin chip which consists of the following processes is indicated by JP,5-74934,A.

[0005] The 1st process: Cut the slot of the predetermined depth from a wafer front face along the street for dividing two or more chips.

The 2nd process: Paste up masking tape for the whole front face of said wafer on a wrap condition.

[0006] The 3rd process: Carry out grinding of the rear face of said wafer, and divide into each chip until it removes the pars basilaris ossis occipitalis of said slot.

The 4th process: Paste up a resin tape for the whole rear face of said wafer by which grinding was carried out on a wrap condition.

[0007] The 5th process: Remove the masking tape adhered to the front face of said wafer.

The 6th process: Extend the resin tape adhered to the rear face of said wafer, and extend spacing of said chip of each which was divided.

[0008] And pickup of a chip is performed after the 6th process. According to such a chip formation approach, the crack which spreads in a wafer with a defect as the starting point can be stopped in a slot.

[0009] However, even if it is the above approaches, since a chip is taken up directly, the damage of each chip cannot be reduced. Even if it is the case where the conventional ultraviolet curing mold adhesive tape is used as a resin tape, only with the suction force of a suction collet, since the binder and chip after hardening have stuck in airtight, pickup is difficult, and pressure from below with a needle etc. is needed too. For this reason, a chip may break at the time of the pressure from below of 2-dollars, and the yield of a chip will fall too.

[0010]

[Objects of the Invention] This invention is made in view of the above conventional techniques, and

aims at offering the manufacture approach of the reliable semi-conductor using the suitable pressure sensitive adhesive sheet for the process which can manufacture ultra-thin IC chip with the sufficient yield, and this pressure sensitive adhesive sheet.

[0011]

[Summary of the Invention] The pressure sensitive adhesive sheet concerning this invention consists of a binder layer formed on the 1st film, the 2nd contractile film formed on this, and the 2nd film, and is characterized by preparing much detailed infeeds in the 2nd film.

[0012] In this invention, it is desirable that the 1st film of the above consists of a non-shrinkable film, and it is desirable that the above-mentioned binder layer consists of an ultraviolet curing mold binder. According to the pressure sensitive adhesive sheet concerning such this invention, after fixing various kinds of adherends temporarily, ultra-thin IC chip which can exfoliate, for example, mentioned adherend above easily by easy actuation can be manufactured with the sufficient yield.

[0013] After the processing approach of the semi-conductor concerning this invention sticks this pressure sensitive adhesive sheet on the front face or rear face of a semi-conductor wafer and performs predetermined processing to a semi-conductor wafer, it is characterized by shrinking a shrinkable film, reducing the touch area of this pressure sensitive adhesive sheet and a semi-conductor wafer, and consisting of an exfoliating process.

[0014]

[Detailed Description of the Invention] Hereafter, it explains still more concretely about this invention, referring to a drawing. As the pressure sensitive adhesive sheet 10 concerning this invention is shown in drawing 1, it consists of a base material 1 and a binder layer 4 formed on this, and a base material 1 is the layered product of the 1st film 2 and the 2nd contractile film 3, and much detailed infeeds 5 are formed in the 2nd film 3.

[0015] Especially as a film 2, it is not limited, various thin-layer items are used, for example, paper, a metallic foil, a synthetic-resin film, etc. are used. Also in these, a synthetic-resin film is preferably used from points, such as a water resisting property, thermal resistance, and elasticity, in this invention. Therefore, also in various general-purpose resin films, it is rich in especially elasticity and the film which can be elongated is desirable. Moreover, as the 1st film 2, few contractile films are preferably used rather than the shrinkable film 3 mentioned later. Specifically as such a non-shrinkable film, polyolefine film; polyvinyl chloride films, such as a polyethylene film, a polypropylene film, a polybutene film, and the poly methyl pentene film, a polyethylene terephthalate film, a polybutylene terephthalate film, a polybutadiene film, a polyurethane film, an ethylene vinyl acetate film, an ethylene (meta) acrylic-acid copolymer film, an ethylene (meta) acrylic ester copolymer film, etc. are used.

[0016] The contraction of the non-shrinkable film used as a film 2 is usually less than 10% of film. In addition, contraction of a film is computed from the dimension before contraction, and the dimension after contraction here based on the following formula.

[0017]

[Equation 1]

$$\text{収縮率} = \frac{(\text{収縮前の寸法}) - (\text{収縮後の寸法})}{\text{収縮前の寸法}} \times 100$$

[0018] The above-mentioned contraction is computed based on a dimension before and after heating a film at 120 degrees C. The thickness of the above non-shrinkable films is usually 5-300 micrometers, and is 10-200 micrometers preferably. In addition, a film 2 may be the monolayer article of the various above-mentioned films, and may be a laminate.

[0019] When using the pressure sensitive adhesive sheet of this invention as a dicing tape or a resin tape, what has an elastic modulus in 23 degrees C in the range of 1×10^7 - 1×10^9 N/m² preferably less than two 1×10^9 N/m as the 1st film used is desirable. If an elastic modulus is this range, even if there is a process which carries out expanded one of the pressure sensitive adhesive sheet in the case of pickup, it can be used satisfactory.

[0020] As a shrinkable film 3, although not limited at all, a heat shrink nature film is mainly used. 10 -

90% is desirable still more desirable, and contraction of the shrinkable film 3 used by this invention is 20 - 80%.

[0021] As above shrinkable films 3, conventionally, although various things are known, if it generally does not have bad influences, such as ion contamination, on adherend, anythings can be used in this invention. Specifically, biaxially oriented films, such as polyethylene terephthalate, polyethylene, polystyrene, polypropylene, nylon, urethane, a polyvinylidene chloride, and a polyvinyl chloride, etc. can be illustrated.

[0022] In addition, the difference between a shrinkable film and a non-shrinkable film is in the point that the contraction differs. For example, in case a polyethylene film is manufactured, it is possible by setting up the manufacture condition etc. suitably to manufacture two sorts of polyethylene films with which contraction differs.

[0023] The thickness of the above shrinkable films 3 is usually 5-300 micrometers, and is 10-200 micrometers preferably. Especially as a shrinkable film 3, it is desirable to use films, such as polyethylene of heat shrink nature, polypropylene, and polyethylene terephthalate.

[0024] A shrinkable film 3 may be the monolayer article of the various above-mentioned shrinkable films, and may be a laminate. In the above-mentioned base material 1, much detailed infeeds 5 are formed in the shrinkable film 3. infeed 5 is formed so that it may result in the abbreviation overall thickness of a shrinkable film 3 -- having -- **** -- further -- an interface -- exceeding -- a part -- although even the film 2 may be attained to -- desirable -- the thickness of a shrinkable film 3 -- abbreviation -- it is equal.

[0025] spacing (infeed pitch) of infeed 5 is determined according to the magnitude of each exfoliating adherend 6 -- having -- desirable -- the maximum length of the base of adherend 6 -- it is more preferably prepared by one 0.1 to 1 time the pitch of this 0.01 to 2 times. Or infeed 5 should just be 1-10mm more preferably 0.1-20mm in a pitch.

[0026] The configuration of infeed 5 may have the shape of a pattern which especially limitation was not carried out, for example, combined the shape of a grid, concentric circular, the shape of a radiation, and these, and may be formed at random. Moreover, although it may be formed over the whole pressure sensitive adhesive sheet surface, infeed 5 is good also as a configuration which forms infeed 5 only inside [circular] the wafer to stick and an abbreviation EQC, and does not form infeed 5 in the periphery section, when using it as a resin tape given in JP,5-74934,A. If a wafer is made in agreement and stuck on such the infeed formation section of a pressure sensitive adhesive sheet, chip spacing can be extended by contraction of the part which does not form infeed, without performing expanded one of a sheet.

[0027] The direct laminating of a film 2 and the shrinkable film 3 may be carried out by dry laminate etc., and they may carry out a laminating through adhesives etc. In the above, without being restricted, especially as adhesives used for junction of a film, adhesives more nearly general-purpose than before are used and adhesives thermoplastic [, such as binders, such as acrylic, a rubber system, and a silicone system, a polyester system, a polyamide system, an ethylene copolymer system, an epoxy system, and an urethane system,] or thermosetting are mentioned. If two or less 109 dyn/cm thermoplastic adhesive is used as an adhesives layer, even if it is the case that a shrinkable film is thin, since the elastic modulus in the temperature which shrinks especially a binder and a shrinkable film cannot have contraction restrained by the 1st film easily, it is desirable.

[0028] Moreover, in order to improve adhesion with a binder, corona treatment may be performed to the near field in which it is prepared, the top face 4, i.e., the binder layer, of a shrinkable film 3, or other layers, such as a primer, may be prepared in it.

[0029] After a base material 1 carries out the laminating of the 1st above film 2 and 2nd above shrinkable film 3, it is manufactured by forming infeed 5 in a shrinkable film 3. A means to form infeed 5 is continuously performed by the cutting die of the shape of a roller equipped with the cutting edge of predetermined height, for example, although especially limitation is not carried out.

[0030] In addition, although ultraviolet rays may be irradiated in front of contraction of the 2nd film 3, or in the back at the binder layer 4 so that it may mention later when using the pressure sensitive

adhesive sheet of this invention, all the films that constitute a base material 1 need to be transparent in this case.

[0031] The binder layer 4 is formed on the 2nd film 3 of the above-mentioned base material 1, and the pressure sensitive adhesive sheet 10 concerning this invention becomes, as shown in drawing 1. The binder layer 4 of a pressure sensitive adhesive sheet 10 may be formed by various pressure-sensitive binders better known than before. As such a binder, although not limited at all, binders, such as a rubber system, acrylic, a silicone system, and polyvinyl ether, are used, for example. Moreover, the binder of a radiation-curing mold or a heating foaming mold can also be used.

[0032] Although the thickness of the binder layer 4 is based also on the quality of the material, it is usually about 3-100 micrometers, and is about 10-50 micrometers preferably. It is used especially as above binders, without restricting various binders. As a radiation-curing (photo-curing, ultraviolet curing, electron ray hardening) mold binder, although the thing of a publication is preferably used for JP,1-56112,B, JP,7-135189,A, etc., it is not limited to these, for example. However, especially in this invention, it is desirable to use an ultraviolet curing mold binder.

[0033] After the binder layer 4 forms infeed 5, forming on a shrinkable film 3 is desirable, but after forming the binder layer 4, infeed 5 may be formed in a shrinkable film 3 the whole binder layer 4 with dicing equipment etc. In this case, in order to stick on a pressure sensitive adhesive sheet 10 at adherend 6 using an ultraviolet curing mold binder, it is desirable to carry out in inert gas, such as nitrogen. If it does in this way, poor hardening of the binder by the oxygen which exists in infeed 5 will be prevented.

[0034] Such a pressure sensitive adhesive sheet 10 concerning this invention is suitably used as the surface protection of the minute adherends 6, such as a semiconductor chip, and a temporary fixed means in the case of processing. That is, as shown in drawing 2, the field which should stick the front face which should protect adherend 6 on a pressure sensitive adhesive sheet 10, and should perform a surface protection, or should process adherend 6 sticks adherend 6 on a pressure sensitive adhesive sheet 10, and performs a predetermined surface protection or processing so that it may be located in the bottom. Subsequently, with means, such as heating, as shown in drawing 3, if a shrinkable film 3 is shrunk, it will accompany to this, the binder layer 4 will deform, a touch area with adherend 6 will decrease, and adhesive strength will decline. Consequently, adherend 6 can be exfoliated easily, without using means, such as a needle. If an ultraviolet curing mold binder is used, since adhesive strength will decrease sharply by UV irradiation especially as a binder layer 4, even if it is weak adherend like a thin IC chip, it can take up easily.

[0035] That is, after the processing approach of the semi-conductor concerning this invention sticks the above-mentioned pressure sensitive adhesive sheet 10 on the front face or rear face of a semi-conductor wafer and performs predetermined processing to a semi-conductor wafer, it is characterized by shrinking a shrinkable film 3, reducing the touch area of this pressure sensitive adhesive sheet 10 and a semi-conductor wafer, and consisting of an exfoliating process.

[0036] Here, with predetermined processing, the rear-face grinding of a wafer (chip) and a surface protection, an imprint, the immobilization at the time of dicing, etc. are mentioned. The following processes can be adopted when using the pressure sensitive adhesive sheet 10 concerning this invention for the rear-face grinding and the surface protection of a wafer (chip).

[0037] The 1st process: Cut the slot 7 of the predetermined depth from wafer 8 front face along the street for dividing two or more chips (refer to drawing 4).

The 2nd process: Paste up the pressure sensitive adhesive sheet 10 of this invention for the whole front face of said wafer on a wrap condition (refer to drawing 5).

[0038] The 3rd process: Carry out grinding of the rear face of a wafer, and divide into each chip 9 until it removes the pars basilaris ossis occipitalis of said slot 7 and becomes predetermined thickness (refer to drawing 6).

The 4th process: Heat a pressure sensitive adhesive sheet and shrink a shrinkable film 3. Consequently, the touch area of a chip 9 and the binder layer 4 decreases, and a chip 9 can be easily exfoliated now (refer to drawing 7). Under the present circumstances, if UV irradiation is performed when the binder layer 4 is formed from an ultraviolet curing mold binder, adhesive strength can be reduced further.

[0039] The 5th process: Take up each divided chip (refer to drawing 8), and mount on a predetermined base, after extending a pressure sensitive adhesive sheet 10 and extending chip spacing if needed.

[0040] According to such a process, the yield is good and a thin IC chip can be manufactured easily.

[0041]

[Effect of the Invention] As explained above, after fixing various kinds of adherends temporarily, according to the pressure sensitive adhesive sheet concerning this invention, ultra-thin IC chip which can exfoliate, for example, mentioned adherend above easily by easy actuation can be manufactured with the sufficient yield.

[0042]

[Example] Although an example explains this invention below, this invention is not limited to these examples.

[0043] In addition, in the following examples and examples of a comparison, the perpendicular exfoliation force was measured as follows.

[Evaluation approach **] (use as masking tape for polish)

The silicon wafer with a diameter [of 6 inches] and a thickness of 700 micrometers was stuck on the dicing sheet (AdwillD-628, LINTEC Corp. make), and the slot was formed with the blade of 35-micrometer thickness on condition that the amount of infeeds of 400 micrometers, and chip size 10mm**. Subsequently, GURAINDO was performed after imprinting to the pressure sensitive adhesive sheet manufactured in the example and the example of a comparison and exfoliating the dicing sheet until it became 80 micrometers in thickness.

[0044] After GURAINDO, when an ultraviolet curing mold binder was used (example 1- 5, 7, and the examples 1 and 2 of a comparison), UV irradiation (quantity of light 135 mJ/cm²) was performed. In addition, in the example 6 and the example 3 of a comparison, it shifted to the following process, without performing UV irradiation.

[0045] Subsequently, after carrying out heating contraction of the shrinkable film for 30 seconds at 110 degrees C, a hook is attached in the upper part of each chip with epoxy system adhesives, and peel strength is measured using an omnipotent tension tester (a part for exfoliation speed 700mm/).

[Evaluation approach **] (use as an imprint tape)

The silicon wafer with a diameter [of 6 inches] and a thickness of 700 micrometers was stuck on the dicing sheet (AdwillD-628, LINTEC Corp. make), and the slot was formed with the blade of 35-micrometer thickness on condition that the amount of infeeds of 400 micrometers, and chip size 10mm**. Subsequently, with the dicing sheet, the protection sheet for polish (Adwill E-6142S, LINTEC Corp. make) was stuck on the opposite side, UV irradiation of the dicing sheet was carried out, and it exfoliated, and GURAINDO was performed until it was set to 80 micrometers.

[0046] Then, the pressure sensitive adhesive sheet manufactured in the example and the example of a comparison was stuck on the opposite side with the protection sheet for polish, and on the protection sheet for polish, ultraviolet rays were irradiated and it exfoliated. Subsequently, when an ultraviolet curing mold binder was used (example 1- 5, 7, and the examples 1 and 2 of a comparison), UV irradiation (quantity of light 135 mJ/cm²) was performed. In addition, in the example 6 and the example 3 of a comparison, it shifted to the following process, without performing UV irradiation.

[0047] Subsequently, after carrying out heating contraction of the shrinkable film for 30 seconds at 110 degrees C, a hook is attached in the upper part of each chip with epoxy system adhesives, and peel strength is measured using an omnipotent tension tester (a part for exfoliation speed 700mm/).

[0048]

[Example 1] It is the following, and the pressure sensitive adhesive sheet 20 of a configuration of being shown in drawing 9 was made and prepared.

1-** [manufacture of a binder 24]

The acrylic binder (copolymer of n-butyl acrylate and acrylic acid) 100 weight section, the urethane acrylate oligomer 200 weight section of molecular weight 7000, the cross linking agent (isocyanate system) 10 weight section, and the ultraviolet curing mold reaction initiator (benzophenone system) 10 weight section were mixed, and the binder constituent was created.

1-** [the adhesives 26 for film pasting]

Polyurethane adhesive (elastic modulus = 3.0×10^8 N/m²) was used as adhesives for film pasting.

1-** [the laminating of the 1st film 22 and the 2nd film 23]

The adhesives of 1-** were applied so that it might become 5 micrometers in thickness on an ethylene-methacrylic-acid copolymer film (100 micrometers in the 1st film and thickness, elastic-modulus 2.15×10^8 N/m²), and they were heated for 30 seconds at 100 degrees C. Subsequently, the heat shrink nature polyethylene terephthalate film (30 micrometers in the 2nd contractile film and thickness and contraction in 120 degrees C are 50%) was pasted together in the adhesives layer on this ethylene-methacrylic-acid copolymer film, and the layered product of the 2nd contractile film 23 and the 1st film 22 was created.

1-** [grant of infeed 25]

Infeed was prepared in the range of 155mmphi in a grid pattern in the pitch of 30 micrometers and 5mm in infeed depth with the roller-like cutting die at the contractile 2nd film 23 side of the layered product obtained by 1-**.

1-** [manufacture of a pressure sensitive adhesive sheet 20]

The binder constituent obtained by the above-mentioned 1-** was applied so that it might become 10 micrometers in thickness on a polyethylene terephthalate film with a thickness of 25 micrometers by which exfoliation processing was carried out, and it dried for 1 minute at 100 degrees C. Subsequently, mold omission was carried out to the shrinkable film side of the layered product (finishing [infeed creation]) obtained by 1-** circularly [207mmphi] the core [lamination and an infeed part], and the pressure sensitive adhesive sheet 20 of the ultraviolet curing adhesion mold of a configuration of being shown in drawing 9 was created.

[0049] The perpendicular exfoliation force was measured as mentioned above using the obtained pressure sensitive adhesive sheet. A result is shown in Table 1.

[0050]

[Example 2] In 1-**, the pressure sensitive adhesive sheet was created like the example 1 except having prepared infeed in the range of 155mmphi in a grid pattern in the pitch of 30 micrometers and 2mm in infeed depth. A result is shown in Table 1.

[0051]

[Example 3] The binder constituent obtained by 1-** was applied so that it might become 10 micrometers in thickness on a polyethylene terephthalate film with a thickness of 25 micrometers by which exfoliation processing was carried out, and it dried for 1 minute at 100 degrees C. Subsequently, it stuck on the contractile 2nd film side of the layered product (before infeed creation) obtained by 1-**, and the pressure sensitive adhesive sheet was created. Subsequently, on the binder layer 24 and the 2nd contractile film 23 of a pressure sensitive adhesive sheet, with the roller-like cutting die, infeed was prepared in the range of 155mmphi in a grid pattern in the pitch of 40 micrometers and 5mm in infeed depth, and the pressure sensitive adhesive sheet 30 of a configuration of being shown at drawing 10 was created. A result is shown in Table 1.

[0052]

[Example 4] In 1-**, the 1st film was replaced with the ethylene-methacrylic-acid copolymer film, and the pressure sensitive adhesive sheet was created like the example 1 except having used the polyethylene terephthalate film (100 micrometers in thickness, elastic-modulus 5.3×10^9 N/m²). A result is shown in Table 1.

[0053]

[Example 5] The pressure sensitive adhesive sheet was created like the example 1 except having replaced the 2nd contractile film with the heat shrink nature polyethylene film (30 micrometers in thickness and contraction in 120 degrees C being 30%). A result is shown in Table 1.

[0054]

[Example 6] The pressure sensitive adhesive sheet was created like the example 1 except having replaced the binder 24 with the constituent which consists of the removability acrylic binder (copolymer of n-butyl acrylate and 2-hydroxyethyl acrylate) 100 weight section, and the cross linking agent

(isocyanate system) 10 weight section. A result is shown in Table 1.

[0055]

[Example 7] The 1st film was replaced with the ethylene-methacrylic-acid copolymer film, and the pressure sensitive adhesive sheet was created like the example 1 except having used the base material as the two-layer shrinkable film using the heat shrink nature polyethylene terephthalate film (30 micrometers in thickness and contraction in 120 degrees C being 50%). A result is shown in Table 1.

[0056]

[The example 1 of a comparison] In the example 1, the pressure sensitive adhesive sheet was created like the example 1 except having used the base material with which 100 micrometers in thickness and a modulus of elasticity consist only of 2.15×10^8 Ns/an ethylene-methacrylic-acid copolymer film of m2 as a base material. A result is shown in Table 1.

[0057]

[The example 2 of a comparison] In the example 1, the pressure sensitive adhesive sheet was created like the example 1 except having used the base material with which 100 micrometers in thickness and a modulus of elasticity consist only of a polyethylene terephthalate film of 5.3×10^9 N/m2 as a base material. A result is shown in Table 1.

[0058]

[The example 3 of a comparison] In the example 6, the pressure sensitive adhesive sheet was created like the example 6 except having used the base material with which 100 micrometers in thickness and a modulus of elasticity consist only of a polyethylene terephthalate film of 5.3×10^9 N/m2 as a base material. A result is shown in Table 1.

[0059]

[Table 1]

	垂直剝離力 (g / 1.0 mm \square)	
	評価方法①	評価方法②
実施例 1	5 未満	5 未満
2	5 未満	5 未満
3	1 0	1 0
4	5 未満	5 未満
5	5 0	5 0
6	1 5 0	1 5 0
7	1 0 0	1 0 0
比較例 1	5 0 0	5 0 0
2	7 0 0	7 0 0
3	1 0 8 0	1 0 8 0

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CLAIMS

[Claim(s)]

[Claim 1] The pressure sensitive adhesive sheet characterized by consisting of a binder layer formed on the 1st film, the 2nd contractile film formed on this, and the 2nd film, and preparing much detailed infeeds in the 2nd film.

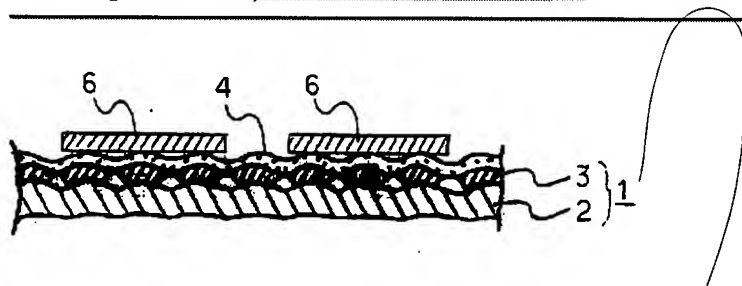
[Claim 2] The pressure sensitive adhesive sheet according to claim 1 characterized by the 1st film consisting of a non-shrinkable film.

[Claim 3] The pressure sensitive adhesive sheet according to claim 1 or 2 characterized by a binder layer consisting of an ultraviolet curing mold binder.

[Claim 4] The processing approach of the semi-conductor which is made to contract a shrinkable film, reduces the touch area of this pressure sensitive adhesive sheet and a semi-conductor wafer, and is characterized by exfoliating after sticking a pressure sensitive adhesive sheet according to claim 1 to 3 on the front face or rear face of a semi-conductor wafer and performing predetermined processing to a semi-conductor wafer.

[Translation done.]

Drawing selection **Representative drawing** 



[Translation done.]